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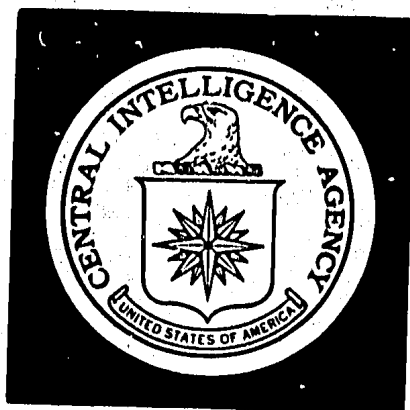
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DIRECTORATE OF  
INTELLIGENCE

# Intelligence Memorandum

*Crop Prospects For The USSR*

*As Of Mid-July 1970*

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CENTRAL INTELLIGENCE AGENCY  
 Directorate of Intelligence  
 August 1970

## INTELLIGENCE MEMORANDUM

Crop Prospects For The USSR As Of Mid-July 1970Introduction

This memorandum assesses the prospects of Soviet crop production in 1970 and reviews the major factors affecting the outcome -- the pattern of sown acreage in 1970, the current status of fall-sown grains and spring-sown crops, weather conditions and the availability of mineral fertilizers. The outlook for crop production is also summarized.

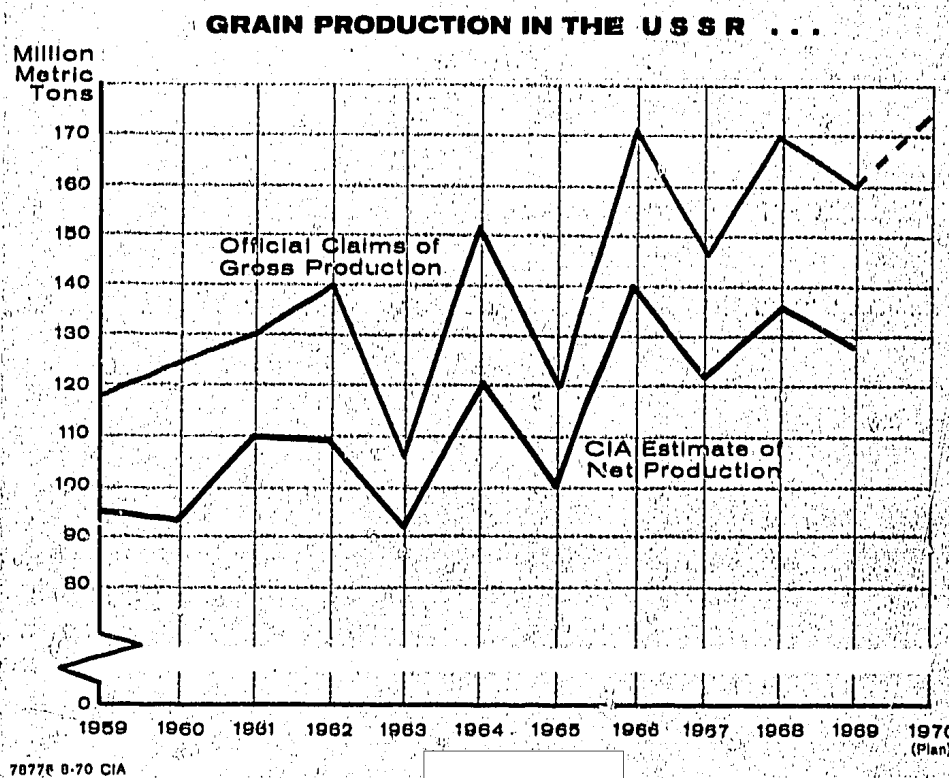
Echoing a view deeply rooted in Soviet -- indeed, Russian -- history, Brezhnev's report of 2 July 1970 on the agricultural program for 1971-75 stated that the key problem in the development of Soviet agriculture is grain production. The political overtones of the success or failure of a harvest, the importance of grains to the Soviet economy, and the relatively poor grain harvest in 1969 call for an early evaluation of crop prospects for 1970 -- particularly the outlook for grains. This evaluation is based on information about growing conditions up to 10 July 1970.

Production of grains during the past decade has expanded at an average annual rate of about 3½% -- slightly faster than the growth of net agricultural production. Even though the growth of grain production has been attended by considerable annual fluctuations attributable in large measure to weather conditions, an upward trend is evident (see the chart). In 1969, for example, the grain crop was plagued by bad weather throughout the crop season, but nevertheless turned out to be the third largest on record.

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The increases in grain production since 1960 are generally due to higher yields per hectare. Factors contributing to these higher yields include: (1) increased use of mineral fertilizer and other agricultural chemicals, (2) improved varieties of grains, and to a lesser extent (3) increased mechanization, (4) land improvement through irrigation and drainage, and (5) expansion of fallow and other improvements in cropping practices.

Despite the realization of substantial increases in output, however, the amounts of grain and other crops frequently fall short of planned goals. Supplies of breadgrains, a major component of the diet, generally have been adequate. But the amount of grain available for feeding livestock has remained substantially below desired levels. The stagnation in livestock production during the course of the past three years contributed to the widespread

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shortages of meat during 1969-70. Increased availability of grains for feeding livestock would make possible increased production of livestock products and, thereby, lead to improvement in the quality of the average Soviet diet. However, expansion of grain production will require more fertilizer, agricultural chemicals, and machinery.

Pattern of Sown Acreage for 1970

1. The total area from which the USSR will harvest grain in 1970 is expected to be slightly below the 1967-69 average of about 122 million hectares (see the tabulation below). This year a shift in the balance of sown acreage between winter grains and spring grains reverses changes that occurred in 1969. Last year, because of unusually heavy winterkill, the winter-grains acreage for harvest was reduced sharply; and an extra 10 million hectares of spring grains were planted.

	Million Hectares			
	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970 Estimated</u>
<i>Total grain acreage for harvest</i>	122.2	121.5	122.7	121.0
Winter grains	33.4	32.8	24.6	32.0
Winter wheat	19.7	19.0	14.4	18.8
Spring grains	88.8	88.7	98.1	89.0
Spring wheat	47.3	48.2	52.0	48.0

In 1970 the harvested acreage of winter grains,\* which yield much more on the average than spring-sown grains, will be much higher than in 1969 but slightly less than the recent norm typified by 1967 and 1968. The opposite is true for spring grains. The area seeded to spring grains in 1970 is expected

\* These are grains sown in the fall; winter wheat, winter rye, and winter barley are included.

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to be over 9 million hectares below the 1969 area but close to the 1967-68 average. About half of the shift between winter grain and spring grain acreage is accounted for by changes in wheat acreages. Thus, the area sown to spring wheat in 1970 was about 4 million hectares less than in 1969.

2. Although winterkill during the past winter is believed to have been above normal, it did not have the devastating consequences of the extremely widespread winterkill of 1969. The USSR, moreover, normally seeds more winter grains than it expects to harvest for grain. In addition to serving as a partial hedge against winterkill, the excess acreage is usually harvested as an early forage crop. Consequently, it is believed that the effects of winter damage on acreage for harvest will be only the slight reduction noted above.

3. The estimated slight decline in acreage of all grains to be harvested in 1970 conforms to a downward trend begun after the postwar peak of 133.3 million hectares was reached in 1964. The total area devoted to grain and fallow has remained relatively constant in recent years but the acreage kept in clean fallow has increased relative to the sown acreage (see the following tabulation):

Million Hectares			
<u>Year</u>	<u>For Harvest</u>	<u>Clean Fallow <sup>a/</sup></u>	<u>Total of Grain and Fallow</u>
1963	130.0	6.3	136.3
1964	133.3	11.6	144.9
1965	128.0	14.7	142.7
1967	122.2	17.7	139.9
1969	122.7	18.0 <sup>b/</sup>	140.7 <sup>b/</sup>

*a. Land fallowed in a given year affects yields in the following year.*

*b. Estimated.*

The practice of fallow contributes to higher yields in the subsequent crop year when the fallow land is seeded, usually to grain.

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Status of Fall-Sown Grains

4. The seeding of winter grains in the fall of 1969 was attended by difficulties. Last summer was dry and cool, retarding the ripening of many crops. As a result, harvesting and the subsequent preparation of land for fall seeding were delayed. In some areas late seeding and marginal soil-moisture supplies prevented the usual degree of growth and development of the wheat before the onset of winter. In other areas, crops suffered from heavy and prolonged covers of snow and ice.

5. Spring arrived early this year, thus providing a relatively long period of weather favorable for growth of winter grains before the onset of summer heat. In nearly all locations moisture conditions were excellent to the end of the growing season. On balance, these factors, combined with the increased application of fertilizer, provide the basis for a relatively favorable estimate of the size of the winter-grain harvest.

6. [REDACTED]

[REDACTED] the condition of winter grains as being on the whole much better than a year ago. Soviet reports give a similar picture. The situation, however, is not uniform. In some areas grain is short while in others growth was tall and the grain has lodged.\*

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Status of Spring-Sown Crops

7. Conditions for seeding in the spring of 1970 were much better than during the very difficult spring a year earlier. Spring field work got off to an early start. Some of the advantage afforded by the good weather, however, was offset by the need to complete an unusual amount of tillage operations before seeding could be accomplished. Some ploughing that normally would have been done in the fall was postponed because of the late harvesting in 1969. Moreover, spring weather did not remain

\* The term lodging describes the condition resulting when stalks break or bend and form a flattened or tangled mass which is difficult to cut.

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favorable in all parts of the country. Thus, the northwest areas were seeded two to three weeks later than usual. Likewise, in parts of Kazakhstan and Siberia, weather interfered with field work at the optimum periods for seeding. Despite such problems, the USSR Ministry of Agriculture concluded that overall spring seeding was successfully completed.

8. Although spring wheat was seeded on an area 4% larger than planned, it appears that the USSR must still consider this a relatively minimal area sown to that crop. If more than the normal area of spring wheat is abandoned before harvest, the final acreage may be significantly below that of the past few years. A heavy infestation of weeds, brought on by this year's rainy weather, could be one cause for above-normal abandonment.

9. The currently favorable outlook for high yields per hectare for spring grains is primarily due to the good supplies of moisture received in all major cropping areas. Spring grain crops in southern areas of the European USSR were reportedly in excellent condition as they neared the harvesting stage. Nevertheless, considerable caution is necessary in estimating the total spring grains harvest at this time. The outcome for much of the acreage of spring grains will be decided in the months ahead. In the New Lands, for example, the harvest usually is not completed until the end of September. Much of the spring grain is grown in areas of low rainfall where the occurrence of hot, dry winds, known as *sukhovey*,\* can cause serious damage. The onset of freezing temperatures before the grain has matured and the occurrence of rain or snow during harvesting -- particularly a threat in the New Lands -- can cause large reductions in the quality as well as in the amount of the grain harvested.

\* *The sukhovey is a local weather condition characterized by heat, dryness, and wind that combine to increase greatly transpiration by the plants and evaporation of moisture from the soil. During most of the growing season, a few days of a severe sukhovey can destroy a crop.*

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### Factors Affecting Crop Production

10. In vast areas of the USSR such as the Volga region, parts of the North Caucasus, and the New Lands, crop yields are highly vulnerable to the extremes of temperature and low precipitation characteristic of these areas. As a result, the success of any crop season in the USSR depends in large measure on weather conditions.

11. In the period October 1969 through June 1970 (from fall seeding through spring seeding and the early stages of growth for spring crops), nearly all parts of the country received a significantly greater accumulation of precipitation than normal. The precipitation in most areas was more than in any of the past four years (a period when three record harvests were obtained). Because precipitation in the major cropping areas ranges from barely minimal to moderately adequate for crop growth (roughly 10 to 20 inches per year), the greater-than-normal total precipitation in the October-June period can be expected to have a beneficial effect on yields of all crops.

12. In June and July, precipitation tapered off to below-normal levels in some important crop regions. In most areas, however, moisture supplies probably remained adequate to complete the ripening of winter grains and to continue growth of spring grains. However, it is likely that crops are suffering from absence of rainfall in northern Kazakhstan to the east of the Urals. The effects of this absence of rainfall have been exacerbated by the occurrence in the New Lands of several days of above-normal temperatures accompanied by high winds.

13. Adding to the prospect of high yields in 1970 is the increasing delivery of chemical fertilizers to the farms. The 1970 plan calls for these deliveries to increase by 7 million tons, or 19% above the 1969 level; however, only 1.8 million tons of this increase reached farms in time to benefit 1970 crops. Fertilizer production, delivery to farms, and the estimated application of fertilizer to grain crops in recent years are shown in the Table.

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USSR: Fertilizer Production, Deliveries to Farms,  
and Application to Grain Crops

	Million Metric Tons <u>a/</u>					
	<u>1960</u>	<u>1965</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Total production	13.9	31.3	40.1	43.5	46.0	57.5 <u>b/</u>
Delivered to agriculture	11.4	27.1	33.7	36.3	38.8	46.2 <u>b/</u>
Applied to grain crops <u>c/</u>	1.8	6.5	9.2	10.7	12.5 <u>d/</u>	15.0 <u>d/</u>

a. All types aggregated as standard units.

b. Planned.

c. Amount applied to grain crops, excluding corn, for harvest in the indicated year. This amount reflects deliveries in the latter part of the preceding year as well as in the early part of the indicated year.

d. Estimated.

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In recent years, an increasing share of the large increase in supply of fertilizer has been applied to grain crops. Although it is difficult to estimate the effect of the greater use of fertilizers, it is reasonable to conclude that some 15 million to 20 million tons of the total production of grain in 1970 is attributable to the use of chemical fertilizers, particularly because rainfall has been abundant.

14. Other products of the chemical industry also are making a contribution to higher crop productivity. Over the years, larger, albeit still inadequate, supplies of herbicides and pesticides have become available. Such materials are particularly important in a year such as this. The herbicides will tend to improve control of the excessive weed growth stimulated by the abundant rainfall. An uncontrolled incursion of weeds lowers the quality as well as the total quantity of grain produced. In addition, the increased supplies of pesticides probably have been especially useful this year because the generally mild winter with heavy snows in some areas favored the development of various pests and diseases of crops.

15. New varieties of crops introduced in recent years are contributing to higher yields. Cropping practices are improving in many areas. The increased use of fallow has been noted (paragraph 3). Another technique that tends to increase yields is stubble-mulch tillage.\* Introduced on a broad scale after 1964, this method of tillage was used on 20 million hectares in 1969.

16. Gradual progress in agricultural mechanization is occurring, although the net increases in inventories of such important items as tractors, grain combines, and trucks are small; and Soviet agriculture remains woefully short of operable equipment. Increased mechanization permits more rapid and timely performance of such operations as tillage, seeding, and harvesting.

\* In stubble-mulch tillage, the soil is cultivated in such a manner that a considerable part of the plant residue is left on the surface, protecting the soil against erosion and assisting retention of moisture in the soil.

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17. Although one-third of the labor force is on the farms, Soviet agriculture continues to be seriously short of skilled workers -- and, indeed, even of unskilled workers at harvest time. This year, as in 1969, a decree was issued invoking special measures to ensure the successful completion of the harvest. The decree authorizes the borrowing of men and trucks from other sectors of the economy. It also provides for special wages and bonuses to those participating in harvest and related transport work. Such measures, however, are costly to the Soviet economy and result in some disruption of production in the industrial sector from July to October. It is likely that the current emphasis on harvest work -- when the basic outlook is favorable -- reflects a desire to garner an exceptional harvest in this last year of the five-year plan, even at some cost to industrial production.

Outlook for Grain Production

18. A bumper crop is in prospect, exceeding or at least matching the record crops of 1966 and 1968. Conditions as of mid-July indicated that -- if weather conditions remain favorable through the harvest period -- the USSR should attain or even exceed its planned 1970 goal of 174 million tons of grain. This goal may be compared to the officially claimed production of grain in recent years as shown in the following tabulation:

<u>Year</u>	<u>Million Metric Tons</u>		
	<u>Official Soviet Claim <sup>a/</sup></u>	<u>Office Estimate <sup>b/</sup></u>	
		<u>Quantity</u>	<u>Percent Discount <sup>c/</sup></u>
1966	171.2	140	18
1967	147.9	122	18
1968	169.5	135	20
1969	160.5	128	20

*a. Bunker weight includes excess moisture and foreign matter.*

*b. Office estimate of usable grain. Net usable grain is estimated as the gross output minus excess moisture, unripe and damaged kernels, weed seeds and other foreign matter, and post-harvest losses incurred in loading, unloading, and handling of grain between combines and storage facilities.*

*c. Office estimates of net production of grain since 1959 have reflected reductions, or "discounts," from official claims for gross output of grain in a range between 14% in 1963 and 26% in 1960.*

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19. Even though the outlook as of mid-July was favorable, the mid-summer period is decisive for the outcome of the grain harvest. Much depends on weather conditions during the completion of harvesting of winter grains and during the ripening and harvesting of spring grains, until completion of the harvest in early October.

Current Outlook for Other Crops

20. The early arrival of spring and the favorable weather have resulted in a relatively long growing season this year. This, together with the more abundant soil moisture during the spring and early summer of 1970, portends output exceeding 1969 levels for technical crops; for forage and hay from meadows and pastures; and for potatoes, vegetables, and fruit. By July, the cotton crop in Central Asia was developing about a week in advance of normal and two to three weeks in advance of 1969 dates. The earlier development of the crop this year favors higher yields and should permit the crop to ripen fully before the onset of adverse fall weather. The area sown, although similar to that in 1969, is slightly above the 1967-68 average. The supply of irrigation water is generally adequate. Thus, cotton production should surpass the depressed output of 1969 and probably will exceed the 1967-68 average.

21. Sugar beets were planted on an area equal to that harvested in 1969. In mid-July the condition of the beets was good, reflecting the adequate soil moisture and relatively long season. Sugar beet output in 1970, therefore, is expected generally to recover from the precipitous 25% decline suffered last year.

22. Sunflowers, the major oilseed crop, were planted on an area that is 3% larger than planned for 1970 but somewhat smaller than the area harvested last year. The condition of the sunflowers, however, is better than a year ago and yields probably will be higher. Meadows and pastures are yielding increased amounts of forage. In areas where hay has been harvested, the average quality exceeded the 1969 level.

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23. The overall 1970 harvest of vegetables and fruits is also expected to be substantially better than in 1969. Soviet sources state that prospects of early vegetables in urban markets this summer are better than a year ago. Supplies of fruit, moreover, should be better because of less frost damage to the crop. Despite increased output, however, efficient distribution and use of vegetables and fruits is still seriously hindered by poor facilities and organization for harvesting, storing, and transporting these crops.

**Conclusions**

24. Crop prospects for the USSR are excellent as of mid-July, but the final outcome could be attenuated if weather conditions deteriorate during the remainder of the crop season. It appears that the 1970 grain output will exceed by a considerable margin the 128 million tons garnered in the difficult harvest of 1969. Indeed, output is likely to surpass the record of 140 million tons reached in 1966.

25. The grain crop to date is characterized by a generally normal balance between fall-seeded and spring-seeded grains in the pattern of sown acreage and by an abundance of soil moisture in practically all cropping areas. In contrast to the situation a year ago, fall-sown grains for harvest in 1970 wintered relatively well and promise excellent yields.

26. Compared with 1969, the larger area for harvest of winter grains (primarily winter wheat and rye) portends a larger share of breadgrains, particularly wheat, in total grain output for 1970. In the USSR, the yield per hectare of winter wheat is much larger than the yield of spring wheat or of most other spring grain crops.

27. The outlook for a large harvest is favorable in practically all spring grain areas. The supply of moisture has been exceptionally high, and a repetition of the 1966 record yields in the New Lands is possible. However, much of the spring grain is grown in areas where rainfall and soil moisture conditions in the summer months are marginal

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at best. Hence, the final outcome of the spring grain harvest depends heavily on the continuation of favorable weather in these areas.

28. The conditions of other crops generally follow the favorable outlook for grain. The harvests of sugar beets, cotton, sunflowers, fruits, potatoes, and other vegetables promise to exceed their depressed levels of 1969 and may reach new highs in 1970.

29. In late June the Soviet government and the Communist Party issued a joint decree authorizing special measures to insure efficient harvesting and procurement of crops. Similar in content to a decree issued in June 1969, the current decree probably reflects a desire of the regime to exploit fully the favorable crop conditions and achieve an exceptional harvest in this last year of the five-year plan.

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